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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,427	09/30/2003	Kazuya Fukuhara	04329.3155	2686

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EXAMINER

BOWERS, BRANDON

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/673,427

Applicant(s)

FUKUHARA ET AL.

Examiner

Brandon W. Bowers

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20030930, 20040506, 20050301</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statements filed 6 May 2004 and 1 March 2005 fail to comply with 37 CFR 1.98(a)(3) because they do not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Objections***

Claim 7 objected to because of the following informalities: Claim 7, line 12, "varing" should be varying. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Baggenstoss et al., US Patent No. 6,374,396.

In reference to claim 1, Baggenstoss teaches acquiring a transmittance characteristic that varies depending on the optical paths of light in a projection optical system specific to said projection optical system (Figure 2, 210 and Column 5, lines 25-43) and acquiring a mask bias of for a photomask by use of the transmittance characteristic of said projection optical system (Figure 2, 230, 240, 250 and Column 5 line 62 – column 6, line 30).

In reference to claim 2, Baggenstoss teaches acquiring a transmission factor of the projection optical system for diffraction light which is generated on the photomask and passes through the projection optical system (Figure 2, 210 and Column 5, lines 25-43).

In reference to claim 3-4, Baggenstoss teaches wherein the photomask comprises a plurality of patterns having different shapes respectively and the acquiring the mask bias of the photomask comprises acquiring a plurality of mask biases for the plurality of patterns Column 5 line 62 – column 6, line 30).

In reference to claim 5, Baggenstoss teaches wherein the acquiring the transmittance characteristic of the projection optical system comprises acquiring transmission factors of the projection optical system for diffraction lights which are generated on a plurality of regions of the photomask (Column 5, lines 25-43) and the acquiring the mask bias of the photomask comprises respectively acquiring mask

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biases for the plurality of regions of the photomask (Column 5 line 62 – column 6, line 30).

In reference to claim 6, Baggenstoss teaches wherein the acquiring the transmittance characteristic the projection optical system comprises acquiring transmission factors of the projection optical system for diffraction lights which are generated on a plurality of regions of the photomask (Column 5, lines 25-43) and the acquiring the mask bias of the photomask comprises acquiring common mask bias for the plurality of regions of the photomask (column 6, lines 32-41).

In reference to claims 7 and 15, Baggenstoss teaches approximating a transmission factor variation of the projection optical system by use of an orthogonal polynomial defined by pupil coordinates of the projection optical system, the transmission factor varying depending on a difference in optical paths of light in the projection optical system, the light passing through the projection optical system (Column 5, lines 25-43), and predicting the pattern based on expansion coefficients of the orthogonal polynomial, the expansion coefficients approximating the transmission factor variation of the projection optical system (Column 5 line 62 – column 6, line 30).

In reference to claims 8 and 16, Baggenstoss teaches wherein the orthogonal polynomial is a Zernike polynomial (column 5, lines 36-43).

In reference to claims 9-10 and 17, Baggenstoss teaches wherein his method is used for standard photolithographic techniques (column 1, lines 24-37).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baggenstoss et al., US Patent No. 6,374,396 in view of Chang et al. US Patent No. 6,470,489.

In reference to claims 11 and 18, Baggenstoss teaches approximating a transmission factor variation of the projection optical system by use of an orthogonal polynomial defined by pupil coordinates of the projection optical system, the transmission factor varying depending on a difference in optical paths of light in the projection optical system, the light passing through the projection optical system (Column 5, lines 25-43), and predicting the pattern based on expansion coefficients of the orthogonal polynomial, the expansion coefficients approximating the transmission factor variation of the projection optical system (Column 5 line 62 – column 6, line 30). Baggenstoss does not teach determining if a predicted pattern lies within a predetermined tolerance to the designed pattern and only correcting the areas of the photomask that are not within the predetermined tolerances. Baggenstoss corrects all areas of the photomask. Chang teaches determining if a predicted pattern lies within a predetermined tolerance to the designed pattern and only correcting the areas of the

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photomask that are not within the predetermined tolerances (Figure 21, and column 20, lines 39-63). Accordingly it would have been obvious for one skilled in the art at the time of invention to incorporate the teachings of Chang and Baggenstoss to create a method/computer program product containing all the limitations found in claims 11 and 18 because it reduces the processing time for photomask creation by only requiring changes to the areas that are outside of tolerances.

In reference to claims 12 and 19, Baggenstoss teaches wherein the orthogonal polynomial is a Zernike polynomial (column 5, lines 36-43).

In reference to claims 13-14 and 20, Baggenstoss teaches wherein his method is used for standard photolithographic techniques (column 1, lines 24-37).

### ***Conclusion***

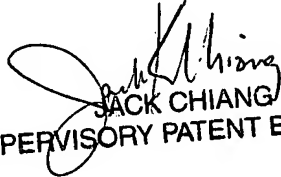
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon W. Bowers whose telephone number is (571)272-1888. The examiner can normally be reached on 8:30 am until 5:00 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571)272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BWB

  
JACK CHIANG  
SUPERVISORY PATENT EXAMINER